AGAROSE BEAD TECHNOLOGIES

Affinity Chromatography Agarose Resins

His-Tag Purification

The Spanish based Agarose Bead Technologies (ABT) is a world leader and has over 20 years experience in the development and production of biotechnology products derived from agarose.

- Market Leader
- Completely vertical integrated, from seaweed to agarose beads
- Multiple production plants (GMP compliance)
- Regulatory Support Files available
- ISO certified
- Business Continuity Plan
- Quality Guaranteed

Only the best is good enough!

Purification of proteins is a vital part of modern research. Impure extracts generally contain a wide range of proteins with diverse biological functions and different chemistry which need to be separated.

Affinity Chromatography is a technique that separates tagged proteins and other biomolecules using biological interactions. This technique has high selectivity and is widely used to obtain proteins with high purity at high yields.

ABT is offering the following Affinity Chromatography resins – both excellent standard resins as customized resins to optimize efficiency.

His-Tag Purification

- Low Pressure: Chelating Agarose Beads and NTA Agarose Beads and Cartridges
- High Pressure: Chelating Rapid Run™ Agarose Beads and Cartridges, Nickel Rapid Run™, and Nickel Agarose Extrachel™

Antibody Purification (separate leaflet available)

- Low Pressure: Protein A Agarose Beads & Protein L Agarose Beads
- High Pressure: Protein A Rapid Run™ Agarose Beads, Protein G Rapid Run™ Agarose Beads, and Protein A/G Rapid Run™ Agarose Beads

Biotin/Avidin Binding Purification (separate leaflet available)

- Low Pressure: Biotin Agarose Beads
- High Pressure: Streptavidin HC Agarose Beads

GST Purification (separate leaflet available)

- Low Pressure: Glutathione Agarose Beads and Cartridges

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Affinity Chromatography Agarose Resins

His-Tag Purification

Affinity Chromatography (IMAC) is the most widely used purification technique. It is based on the interaction between certain superficial protein residues (histidines, cysteines and to a lesser extent tryptophans), with transition metal cations, forming chelates. The transition metal/protein complex is then bound to chelating groups attached to the agarose beads. Elution is usually by lowering pH or by adding imidazole.

Low pressure

ABT offers two types of chelating beads using standard crosslinked beads and two different ligands iminodiacetic acid (IDA) and nitrilotriacetic acid (NTA).

In comparison with other chelating resins such as NTA agarose, the IDA has three sites available for the interaction with metal ions, instead of the four with NTA. IDA resins are usually more easily regenerated, allowing a better elution of the bound proteins with lower concentrations of imidazole.

The product range covers four different types of metal and two different densities of groups on the beads. From highest to lowest affinity.

- Copper chelates recognize one single exposed target residue. This resin is recommended for proteins that are difficult to separate.
- Nickel chelates recognize two exposed target residues (usually histidines) for an efficient protein binding and it is recommended for the majority of His-tagged protein purifications.
- Zinc chelates seems to recognize two exposed target residues in vicinal position and it is recommended to work with proteins that are difficult to separate.
- Cobalt chelates recognize two exposed target vicinal residues. This resin provides very good selectivity. cobalt is used when it is desired to increase the purity of purification.

High pressure

Nickel & Cobalt are the most commonly used metal ions for IMAC purifications. Nickel/Cobalt Rapid Run™ beads combine the advantage of the metal with the high flow rates of the Rapid Run™ resins. These products are excellent for large scale His-tagged protein purifications.

Nickel Agarose Extrachel™ is an IMAC resin precharged with nickel that is strongly bound to a ligand. Nickel remains bound to the chelating ligand after incubation in 20 mM EDTA.

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Affinity Chromatography Agarose Resins

LOW PRESSURE: Chelating Agarose Beads

Bulk Resins

ABT offers resins for purifications of histidine-tagged proteins by Immobilized Metal Affinity Chromatography (IMAC).

- Different grades of activation to optimize the relationship between binding capacity and purification selectivity
- Resins charged with Ni, Cu, Zn or Co as well as metal free
- For batch or column purifications

Product	High Density Metal Free/Nickel/ Zinc/Cobalt	High Density Metal Free/Nickel/ Zinc/Copper
Bead Geometry & Size	Spherical, Standard:~50 - 150 µm	
Crosslinked	yes	
Agarose %	6%	
Matrix	Stable in all commonly used reagents	
Binding/Loading capacity (µmol Me2+/ml gel)	20 - 40	5 - 19
Antimicrobial agent	20% ethanol	
Storage Temperature	2 - 8°C	

LOW PRESSURE: Chelating Agarose Beads

Pre-Packed Columns

ABT offers Pre-Packed ready to use columns for purifications of histidine-tagged proteins

- Fast and simple purification
- For gravity flow
- No need of purification systems
- Available for Ni and Co chelating resins
- Contains 1 or 5 ml of gel

Product	High Density Metal Free/Nickel/ Zinc/Cobalt	High Density Metal Free/Nickel/ Zinc/Copper
Bead Geometry & Size	Spherical, Standard:~50 - 150 µm	
Crosslinked	yes	
Agarose %	6%	
Column material	Polypropylene column and polyethylene frit	
Bed volume	1 ml	5 ml
Quantity of columns	20% ethanol	
Loading capacity (µmol Me2+/ml gel)	20 -40	
Antimicrobial agent	20% ethanol	
Storage Temperature	2 - 8°C	
Available product quantity	Contains 1 or 5 ml of gel	

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Affinity Chromatography Agarose Resins

LOW PRESSURE: Nickel NTA Agarose Beads

Bulk Resins

Nickel NTA Agarose resin consist of cross-linked agarose derivatized with Nitrilotriacetic acid (NTA) and loaded with divalent nickel ions. This resin is the most common IMAC resin for working in reducing conditions because of the four metal binding sites on the chelate, which enables high-protein binding and minimal metal leaching.

- Ones step Purification
- High capacity
- Purification under native denaturing conditions
- Minimum metal leaching

Product	Nickel NTA Agarose Resin
Bead Geometry & Size	Spherical, Standard: ~50 - 150 µm
Crosslinked	yes
Agarose %	6%
Ligand	Stable in all commonly used reagents
Static binding capacity	≥ 50 mg/ml gel[1]
Antimicrobial agent	20% ethanol
Storage Temperature	2 - 8°C
Available product quantity	25 ml, 100 ml and 500 ml

1 Static binding capacity will differ for each target protein

LOW PRESSURE: Nickel NTA Agarose Cartridges

Cartridges

Nickel NTA Agarose cartridges 5 ml are Pre-Packed ready to use products for fitting into the MPLC, FPLC and ÅKTA™ design devices. ABT offers units of 1 or 5 cartridges packed with 5 ml of Nickel NTA Agarose resin.

Product	Nickel NTA Agarose Cartridge 5 ml
Bead Geometry & Size	Spherical, Standard: ~50 - 150 µm
Description	Cartridges 5 ml resin
Crosslinked	yes
Agarose %	6%
Ligand	Nitrilotriacetic acid (NTA)
Static binding capacity	≥ 50 mg/ml gel[1]
Recommended flow rate	5 ml/min
Application	Automated liquid chromatography (MPLC, FPLC, ÅKTA™ design) peristatic pump & syringe
Cartridge ports	Standard 10 -32 fitting without additional connectors
Antimicrobial agent	15 % ethanol of total volumn
Storage Temperature	4 - 8°C
Quantity of cartridges	1 or 5

1 Static binding capacity will differ for each target protein

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AGAROSE BEAD TECHNOLOGIES

Affinity Chromatography Agarose Resins

HIGH PRESSURE: Chelating Rapid Run™ Agarose Beads

Bulk Resins

Nickel, Cobalt and Metal Free Rapid Run™ agarose beads are designed for large scale downstream purification of His-tagged proteins using IMAC technology and support 70% higher flow rates than other commercially available products.

- Easy scale up and robust function
- High chemical and physical stabilities
- Excellent Resolution in minimal time.

Product	Metal Free Rapid Run™	Nickel Rapid Run™	Cobalt Rapid Run™
Bead Geometry & Size	Spherical, Standard: ~50 - 150 µm		
Exclusion limit	4 x 10^6		
Crosslinked	Highly crosslinked		
Agarose %	6%		
Binding/Loading capacity (µmol Me2+/ml gel)	~20		
Ligand	Iminodiacetic acid		
Antimicrobial agent	20% ethanol		
Storage Temperature	2 - 8°C		
Available product quantity	25 ml, 100 ml and 500 ml		

Cartridges

Nickel Affinity Cartridges 5 ml are used for purification of histidine-tagged proteins.

- No need for optimization or protocol change
- Excellent adaptability: cartridges suitable for MPLC, FPLC, ÅKTA™ design devices
- High purity achieved in one purification step, comparable to market standards

Product	Nickel Affinity Cartridge 5 ml
Bead Geometry & Size	Spherical, fine ~20 - 50 µm
Description	Cartridges 5 ml resin
Crosslinked	Highly crosslinked
Agarose %	6%
Ligand	Nitrilotriacetic acid (NTA)
Application	Automated liquid chromatography (MPLC, FPLC, ÅKTA™ design) peristaticpump & syringe
Cartridge ports	Standard 10 -32 fitting without additional connectors
Antimicrobial agent	20 % ethanol
Storage Temperature	2 - 8°C
Quantity of cartridges	1 or 5

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AGAROSE BEAD TECHNOLOGIES

Affinity Chromatography Agarose Resins

High Pressure: Nickel NTA Rapid Run™

Bulk Resins

This resin consists of highly crosslinked agarose with Nitrilotriacetic acid (NTA) ligand. The resin provides excellent properties working in the presence of reducing agents and is designed for large scale downstream purification of His-tagged proteins.

Product	Nickel NTA Agarose Resin
Bead Geometry & Size	Spherical, Standard: ~50 - 150 µm
Crosslinked	Highly crosslinked
Agarose %	6%
Ligand	Nitrilotriacetic acid (NTA)
Loading capacity (µmol Me2+/ml gel)	≥ 15
Protein binding capacity (mg/ml gel)	≥ 60
Antimicrobial agent	20% ethanol
Storage Temperature	2 - 8°C
Available product quantity	25 ml, 100 ml and 500 ml

High Pressure: Nickel Agarose Extrachel™

Bulk Resins

Nickel Agarose Extrachel™ is a high capacity resin manufactured with a polychelator ligand. The product is developed to work in the presence of EDTA and DTT without any loss of performance. It's specificity and stability allows a one-step purification eliminating the need of pretreatment of samples that cause nickel stripping.

Product	Nickel NTA Agarose Resin
Bead Geometry & Size	Spherical, Standard: ~50 - 150 µm
Crosslinked	Highly crosslinked
Agarose %	6%
Chemical stability	20 mM DTT, 20 mM EDTA, 8 M urea, 6 M guanidinium hydrochoride, 30% acetonitrile, 100% methanol, 100% ethanol, and buffer solutions at pH 4 - 9
Loading capacity (µmol Me2+/ml gel)	≥ 60
Static binding capacity (mg/ml gel)	≥ 80[1]
Antimicrobial agent	20% ethanol
Storage Temperature	2 - 8°C
Available product quantity	25 ml, 100 ml and 500 ml

1 Static binding capacity will differ for each target protein

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